# CLAIM AMENDMENTS

## Claim Amendment Summary

### Claims pending

- Before this Amendment: Claims 1-35.

- After this Amendment: Claims 1-35

### Non-Elected, Canceled, or Withdrawn claims:   none

### Amended claims:  1-35

### New claims: none

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## Claims:

1. **(Currently Amended)** A <u>data mining</u> method <u>comprising:</u>

<u>accessing one or more data sets, each data set storing data organized as cases, each</u> <u>case comprising:</u>

<u>a key value;</u>

<u>a value in one or more variables;</u>

<u>retrieving data from a data set;</u>

<u>creating one or more mining structures using data retrieved from the data set,</u> <u>wherein the creating comprises:</u>

<u>defining one or more mining structure variables; and</u>

<u>defining one or more acts of processing to be performed on the retrieved</u> <u>data, wherein the one or more acts of processing may be performed on a subset of</u> <u>the retrieved data;</u>

performing processing on the retrieved data, wherein processing occurs only on the data determined necessary per the definitions in the mining structure;

storing results of processing the data;

ascertaining the existence of one or more mining structures available for mining model creation;

creating one or more mining models, wherein one of the one or more mining models created from a mining structure is not equal to another of the one or more mining models created from the same mining structure;

providing results of the creation of the one or more mining models

~~for providing pre-processed data for the training of mining models, comprising:~~

~~determining at least one mining structure variable from among a set of at least one variable in data set training data, the data set training data comprising at least one set of case data, each set of case data comprising a stored value for at least one variable from among the set of at least one variable;~~

~~for each set of case data, retrieving a stored value for each of said at least one mining structure variables from said data set training data;~~

~~performing mining model initial processing on said retrieved values; and storing the results of said mining model initial processing.~~


**2. (Currently Amended)** The method of claim 1, wherein one or more mining structures serve as first class objects in a database

~~wherein said step of determining at least one mining structure variable from among said set of at least one variable comprises:~~

~~accepting creation operation data comprising data comprising the identity of said mining structure variables~~.

**3. (Currently Amended)** The method of <u>claim 1 wherein one of the one or more mining structures created from a data set is not equal to another of the one or more mining structures created from the same data set</u>

~~claim 2, wherein said at least one mining structure variable comprises a continuous variable, wherein said creation operation data comprises an indication regarding discretization of said continuous variable, and wherein said step of performing mining model initial processing on said retrieved values comprises discretizing said continuous variable according to said indication.~~

**4. (Currently Amended)** The method of claim 3, <u>wherein the cases represented by the mining structure variables stored in one of the one or more mining structures created from a data set are not the same as the cases represented by the mining structure variables stored in another one of the one or more mining structures created from the same data set</u>

~~wherein said indication comprises an indication of a number of buckets into which said continuous variable should be discretized.~~

**5. (Currently Amended)** The method of claim 3, <u>wherein the values stored in one of the one or more mining structure's mining structure variables created from a data set are not equal to the values stored in another of another one of the one or more mining structure's mining structure variables created from the same data set</u>

~~wherein said indication comprises an indication of sub-ranges into which said continuous variable should be discretized.~~

**6. (Currently Amended)** The method of <u>claim 3, wherein links between the one or more mining models and the mining structure from which each mining model was created are stored, and whereby changes in one or more mining structures are simultaneously reflected in each of the one or more mining models created from each of the changed mining structures</u>

~~claim 1, wherein said stored results are associated with at least one mining model; and wherein each of said at least one mining model is trained using said stored results.~~

**7. (Currently Amended)** A <u>method as recited in claim 3, further comprising:</u>

<u>evaluating two or more mining structures created using data from the same data set by comparing at least one mining model created from each of the two or more mining structures;</u>

<u>providing the results of the comparison</u>

~~tangibly embodied computer readable medium comprising computer executable modules having computer executable instructions, said modules providing pre-processed data for the training of mining models, said computer executable modules comprising:~~

~~a mining structure variable determination module for determining at least one mining structure variable from among a set of at least one variable in data set training data, the data set training data comprising at least one set of case data,~~

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each set of case data comprising a stored value for at least one variable from among the set of at least one variable;

a data set training data retrieval module for each case, retrieving a stored value for each of said at least one mining structure variables from said data set training data;

an initial processing module for performing mining model initial processing on said retrieved values; and

a storage module for storing the results of said mining model initial processing.

8. (Currently Amended) The <u>method as recited in claim 1, further comprising</u> <u>providing two or more mining models created from the same mining structure for</u> <u>comparison</u>
computer readable medium of claim 7, wherein said mining structure variable determination module accepts creation operation data comprising data comprising the identity of said mining structure variables.

9. (Currently Amended) The <u>method as recited in claim 1, further comprising:</u> <u>accepting a drill through query for specified data; and</u> <u>providing said specified data</u>
computer readable medium of claim 8, wherein said at least one mining structure variable comprises a continuous variable, wherein said creation operation data comprises an indication regarding discretization of said continuous variable, and wherein said initial processing module discretizes said continuous variable according to said indication.

**10. (Currently Amended)** A The computer storage readable medium having

embodied thereon computer executable instructions which, when executed by a

processor, perform a method comprising:

accessing one or more data sets, each data set storing data organized as cases, each

case comprising:

a key value;

a value in one or more variables;

retrieving data from a data set;

creating one or more mining structures using data retrieved from the data set,

wherein the creating comprises:

defining one or more mining structure variables; and

defining one or more acts of processing to be performed on the retrieved

data, wherein the one or more acts of processing may be performed on a subset of

the retrieved data;

performing processing on the retrieved data, wherein processing occurs only on

the data determined necessary per the definitions in the mining structure;

storing results of processing the data;

ascertaining the existence of one or more mining structures available for mining

model creation;

creating one or more mining models, wherein one of the one or more mining

models created from a mining structure is not equal to another of the one or more mining

models created from the same mining structure;

providing results of the creation of the one or more mining models

of claim 9, wherein said indication comprises an indication of a number of buckets into which said continuous variable should be discretized.

**11. (Currently Amended)** The computer <u>storage medium as recited in claim 10 wherein one or more mining structures serve as first class objects in a database</u> ~~readable medium of claim 9, wherein said indication comprises an indication of sub-ranges into which said continuous variable should be discretized.~~

**12. (Currently Amended)** The computer <u>storage medium as recited in claim 10 wherein one of the one or more mining structures created from a data set is not equal to another of the one or more mining structures created from the same data set</u>
~~readable medium of claim 9, wherein said stored results are associated with at least one mining model, and wherein each of said at least one mining model is trained using said stored results.~~

**13. (Currently Amended)** <u>A computer storage medium as recited in claim 12 wherein the cases represented by the mining structure variables stored in one of the one or more mining structures created from a data set are not the same as the cases represented by the mining structure variables stored in another one of the one or more mining structures created from the same data set</u>
~~An application programming interface tangibly embodied in at least one computer readable storage medium for use in connection with providing pre-processed data for the training of mining models, wherein said application programming interface~~

~~receives as input creation operation data comprising data comprising the identity of mining structure variables from among a set of at least one variable in data set training data, the data set training data comprising at least one set of case data, each set of case data comprising a stored value for at least one variable from among the set of at least one variable; for each case, retrieves a stored value for each of said at least one mining structure variables from said data set training data; performs mining model initial processing on said retrieved values; and stores the results of said mining model initial processing.~~

**14. (Currently Amended)** The <u>computer storage medium as recited in claim 12 wherein the values stored in one of the one or more mining structure's mining structure variables created from a data set are not equal to the values stored in another of another one of the one or more mining structure's mining structure variables created from the same data set</u>

~~application programming interface of claim 13, wherein said at least one mining structure variable comprises a continuous variable, wherein said creation operation data comprises an indication regarding discretization of said continuous variable, and wherein said application programming interface discretizes said continuous variable according to said indication.~~

**15. (Currently Amended)** The <u>computer storage medium as recited in claim 10 wherein links between the one or more mining models and the mining structure from which each mining model was created are stored, and whereby changes in</u>

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one or more mining structures are simultaneously reflected in each of the one or more mining models created from each of the changed mining structures ~~application programming interface of claim 14, wherein said indication comprises an indication of a number of buckets into which said continuous variable should be discretized.~~

**16. (Currently Amended)** The computer storage medium as recited in claim 12, wherein the method further comprises:

evaluating two or more mining structures created using data from the same data set by comparing at least one mining model created from each of the two or more mining structures;

providing the results of the comparison ~~application programming interface of claim 14, wherein said indication comprises an indication of sub-ranges into which said continuous variable should be discretized.~~

**17. (Currently Amended)** The computer storage medium as recited in claim 10, wherein the method further comprises providing two or more mining models created from the same mining structure for comparison ~~application programming interface of claim 13, wherein a query is sent and said stored results are retrieved via at least one network.~~

**18. (Currently Amended)** The computer storage medium as recited in claim 10, wherein the method further comprises:

accepting a drill through query for specified data; and

providing said specified data

~~application programming interface of claim 13, wherein said stored results are associated with at least one mining model, and wherein each of said at least one mining model is trained using said stored results.~~

**19. (Currently Amended)** A data mining method comprising:

accessing one or more data sets, each data set storing data organized as cases, each case comprising:

a key value;

a value in one or more variables;

retrieving data from a data set;

creating one or more mining structures using data retrieved from the data set, wherein the creating comprises:

defining one or more mining structure variables; and

defining one or more acts of processing to be performed on the retrieved data, wherein the one or more acts of processing may be performed on a subset of the retrieved data;

performing processing on the retrieved data, wherein processing occurs only on the data determined necessary per the definitions in the mining structure;

storing results of processing the data;

ascertaining the existence of one or more mining structures available for mining model creation;

creating one or more mining models, wherein one of the one or more mining models created from a mining structure is not equal to another of the one or more mining models created from the same mining structure, wherein when a mining model creation function detects that no mining structure utilizing data from the desired data set is currently available, creating one or more mining models includes creating said mining structure;

providing results of the creation of the one or more mining models

~~system for providing pre-processed data for the training of mining models at, said system comprising:~~

~~an application programming interface implemented at least in part by a computing device, said application programming interface (a) receiving as input creation operation data comprising data comprising the identity of mining structure variables from among a set of at least one variable in data set training data, the data set training data comprising at least one set of case data, each set of case data comprising a stored value for at least one variable from among the set of at least one variable; (b) for each case, retrieving a stored value for each of said at least one mining structure variables from said data set training data; (c) performs mining model initial processing on said retrieved values; and (d) stores the results of said mining model initial processing; and~~

~~a database for storing said data set training data, operably connected with said application programming interface, and for returning said stored values to said application programming interface.~~

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**20. (Currently Amended)** A <u>method as recited in claim 19 wherein one or more</u> <u>mining structures serve as first class objects in a database</u> ~~computer system for providing pre-processed data for the training of mining models, said system comprising:~~

~~determination means for determining at least one mining structure variable from among a set of at least one variable in data set training data, the data set training data comprising at least one set of case data, each set of case data comprising a stored value for at least one variable from among the set of at least one variable;~~

~~retrieval means for each case, retrieving a stored value for each of said at least one mining structure variables from said data set training data;~~

~~initial processing means for performing mining model initial processing on said retrieved values; and~~

~~storage means for storing the results of said mining model initial processing.~~

**21. (Currently Amended)** The <u>method as recited in claim 19 wherein one of the</u> <u>one or more mining structures created from a data set is not equal to another of the</u> <u>one or more mining structures created from the same data set</u> ~~system of claim 20, wherein said determination means comprises:~~ ~~data acceptance means for accepting creation operation data comprising data comprising the identity of said mining structure variables.~~

**22. (Currently Amended)** The <u>method as recited in claim 21 wherein the mining</u> <u>structure variables stored in one of the one or more mining structures created from</u>

a data set are not the same as the mining structure variables stored in another one of the one or more mining structures created from the same data set ~~system of claim 21, wherein said at least one mining structure variable comprises a continuous variable, wherein said creation operation data comprises an indication regarding discretization of said continuous variable, and wherein initial processing means comprises discretization means for discretizing said continuous variable according to said indication.~~

23. **(Currently Amended)** The method as recited in claim 21 wherein the values stored in one of the one or more mining structure's mining structure variables created from a data set are not equal to the values stored in another of another one of the one or more mining structure's mining structure variables created from the same data set ~~system of claim 22, wherein said indication comprises an indication of a number of buckets into which said continuous variable should be discretized.~~

24. **(Currently Amended)** The method as recited in claim 19 wherein links between the one or more mining models and the mining structure from which each mining model was created are stored, and whereby changes in one or more mining structures are simultaneously reflected in each of the one or more mining models created from each of the changed mining structures ~~system of claim 22, wherein said indication comprises an indication of sub-ranges into which said continuous variable should be discretized.~~

**25. (Currently Amended)** A computer storage medium having embodied thereon computer executable instructions which, when executed by a processor, perform a method comprising:

accessing one or more data sets, each data set storing data organized as cases, each case comprising:

a key value;

a value in one or more variables;

retrieving data from a data set;

creating one or more mining structures using data retrieved from the data set, wherein the creating comprises:

defining one or more mining structure variables; and

defining one or more acts of processing to be performed on the retrieved data, wherein the one or more acts of processing may be performed on a subset of the retrieved data;

performing processing on the retrieved data, wherein processing occurs only on the data determined necessary per the definitions in the mining structure;

storing results of processing the data;

ascertaining the existence of one or more mining structures available for mining model creation;

creating one or more mining models, wherein one of the one or more mining models created from a mining structure is not equal to another of the one or more mining models created from the same mining structure, wherein when a mining model creation function detects that no mining structure utilizing data from the desired data set is

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currently available, creating one or more mining models includes creating said mining structure;

providing results of the creation of the one or more mining models

~~The system of claim 22, wherein said stored results are associated with at least one mining model, and wherein each of said at least one mining model is trained using said stored results.~~

**26. (Currently Amended)** A method as recited in claim 25 wherein one of the one or more mining structures created from a data set is not equal to another of the one or more mining structures created from the same data set

~~for the training of a mining model, comprising:~~

~~determining at least one mining structure variable from among a set of at least one variable in data set training data, the data set training data comprising at least one set of case data, each set of case data comprising a stored value for at least one variable from among the set of at least one variable;~~

~~for each case, retrieving a stored value for each of said at least one mining structure variables from said data set training data;~~

~~performing mining model initial processing on said retrieved values;~~

~~storing the results of said mining model initial processing in a mining structure; and training said mining model using said stored results.~~

**27. (Currently Amended)** The method of claim 26, <u>wherein the mining structure variables stored in one of the one or more mining structures created from a data set are not the same as the mining structure variables stored in another one of the one or more mining structures created from the same data set</u>

~~further comprising:~~

~~storing link data indicating that said mining model has been trained on data from said mining structure.~~

**28. (Currently Amended)** The method of claim 26, <u>wherein the values stored in one of the one or more mining structure's mining structure variables created from a data set are not equal to the values stored in another of another one of the one or more mining structure's mining structure variables created from the same data set</u>

~~further comprising:~~

~~accepting a drill through query for specified data from said mining structure and providing said specified data.~~

**29. (Currently Amended)** The method <u>as recited in claim 25 wherein links between the one or more mining models and the mining structure from which each mining model was created are stored, and whereby changes in one or more mining structures are simultaneously reflected in each of the one or more mining models created from each of the changed mining structures</u>

~~of claim 26, wherein additional mining models are associated with said mining structure, and wherein said method further comprises: training each of said additional mining models using said stored results.~~

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**30. (Currently Amended)** A data mining system comprising:

a processing unit;

a system memory coupled to the processing unit;

one or more data sets, each data set storing data organized as cases, each case comprising:

a key value;

a value in one or more variables;

one or more mining structures created with data from a data set and available for mining model creation, each mining structure comprising:

a structure wherein information from the data set is processed, wherein processing occurs only on the data necessary per the definitions in the mining structure and includes discretizing per said definitions;

a container wherein processed information from the data set is stored,

one or more mining models, each mining model being created from a mining structure wherein one of the one or more mining models created from a mining structure is not equal to another of the one or more mining models created from the same mining structure and whereby results of the data mining are provided The method of claim 26, wherein said mining structure is treated as a first class object in a database.

**31. (Currently Amended)** A system as recited in claim 30 wherein one or more mining structures serve as first class objects in a database

tangibly embodied computer readable medium comprising computer executable modules having computer executable instructions, said modules training a mining model, said modules comprising:

a mining structure variable determination module for determining at least one mining structure variable from among a set of at least one variable in data set training data, the data set training data comprising at least one set of case data, each set of case data comprising a stored value for at least one variable from among the set of at least one variable;

a data set training data retrieval module for each case, retrieving a stored value for each of said at least one mining structure variables from said data set training data;

an initial processing module for performing mining model initial processing on said retrieved values;

a storage module for storing the results of said mining model initial processing; and

a training module for training a mining model using said stored results.


32. **(Currently Amended)** The <u>system as recited in claim 30 wherein one of the one or more mining structures created from a data set is not equal to another of the one or more mining structures created from the same data set</u>

computer readable medium of claim 31, said modules further comprising:

link data storage module storing link data indicating that said mining model has been trained on data from said mining structure.

**33. (Currently Amended)** The ~~system as recited in claim 32 wherein the mining structure variables stored in one of the one or more mining structures created from a data set are not the same as the mining structure variables stored in another one of the one or more mining structures created from the same data set~~ computer readable medium of claim 31, said modules further comprising:

~~drill-through module for accepting a drill-through query for specified data from said mining structure and providing said specified data.~~

**34. (Currently Amended)** The system as recited in claim 32 wherein the values stored in one of the one or more mining structure's mining structure variables created from a data set are not equal to the values stored in another of another one of the one or more mining structure's mining structure variables created from the same data set ~~computer readable medium of claim 31, wherein additional mining models are associated with said mining structure, and wherein said training module further trains each of said additional mining models using said stored results.~~

**35. (Currently Amended)** The system as recited in claim 30 wherein links between the one or more mining models and the mining structure from which each mining model was created are stored, and whereby changes in one or more mining structures are simultaneously reflected in each of the one or more mining models created from each of the changed mining structures ~~computer readable medium of claim 31, wherein said mining structure is treated as a first class object in a database.~~